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NASA - JPL
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INFORMATIONAL MEETING
NASA/JET PROPULSION LABORATORY

26 MAY 1999

ATTENDEES:

Charles L. Buri, JPL

Craig Christmann, DTSC

Mark Cutler, Foster Wheeler

Richard Gebert, DTSC

Vitthal Hosangadi, Foster Wheeler

Joe Hwang, DTSC

Mark Losi, Foster Wheeler

B. G. Randolph, Foster Wheeler

Mark Ripperda, USA EPA via telephone

Peter Robles, Jr., NASA

Vera Melnyk Vecchio, DHS

Gary Yamamoto, DHS

Also Present:

Wagner Jackson, U.S. DOJ

Jane Mahoney, U.S. DOJ

Reported by: Louise K. Mizota, CSR 2818

1 Pasadena, California

2 May 26, 1999

3 1:17 P.M.

4
5 BURIL: I'm going to pass around a sheet. For
6 those of you who are new to us, the way that we keep
7 notes on all the meetings that we do of this size,
8 we have a transcript made because that's just the
9 easiest way to be sure that everything is down and
10 there's no misinterpretation. We've been doing this
11 for years. It's worked out very well for us.

12 The agenda here is pretty light for the
13 most part. Gary is the principal player on most of
14 this. And I've got a couple of things I wanted to
15 go through first to try to bring Gary and Joe up to
16 speed on the site a little bit. And then on the
17 basis of that information, we can maybe talk a
18 little bit about this Policy 97-005 and try to get
19 some understanding of how it applies to our site.

20 Mark, unfortunately, you're going to be at
21 somewhat of a disadvantage there on the phone
22 because I'm using some video -- not video, but
23 graphics here. I don't have ones to hand out to
24 everybody. First of all, let me tell the RPMs that
25 what I'm going to be showing to everyone today are

2

1 the modified plume maps for the OU-2 -- excuse me,
2 OU-1/3 RI, which is, as you know, supposed to be
3 finished up here the next three weeks, I think.

4 They incorporate all the changes that we
5 talked about back in -- when did we talk about that?
6 February time frame?

7 CUTLER: Yeah. Somewhere in there.

8 BURIL: Somewhere in there. So I'm not going to
9 hand these out because obviously they haven't been
10 reviewed yet, and so forth, but they give the
11 indication, at least, of what we're dealing with
12 here at JPL. And I think that's going to be very
13 helpful for folks to be able to understand that. So
14 I just wanted to preface that and take a quick straw
15 poll if anyone has a problem with that.

16 Okay. Great.

17 I brought along a big map. We've got the
18 one up there. Mark, for your benefit, I'm looking
19 at the foam-backed one that we always use. And then
20 I also have a larger map that shows all of the
21 various municipal wells and monitoring wells on JPL
22 and so forth.

23 I don't know if that's going to sit up
24 there by itself.

25 ROBLES: I'll have to get a clip.

3

1 BURIL: Actually, Pete, if you had a -- oh. All
2 right. That works. Good. I'll be darned. Okay.

3 Basically, the site is -- let's see. I'm
4 going to walk up there.

5 ROBLES: Why don't you walk up there. I'll get
6 some clips.

7 BURIL: Just to orient everybody here with what
8 we're dealing with. Here is the site right here.

9 And we've got our monitoring wells in a variety of
10 colors here. The diamond-shaped, or rather
11 pyramid-shaped ones are multi-port wells. Those are
12 the ones that we use to be able to sample at various
13 depths throughout the aquifer.

14 The round blue ones are the shallow
15 monitoring wells that we have. And those just go
16 into the upper part of the aquifer.

17 The squares are municipal production
18 wells. And they're from various organizations
19 throughout the area.

20 We've got Pasadena folks on these four
21 here, Lincoln Avenue Water Company on these two,
22 Rubio Canyon and Las Flores out in this area, and
23 then up in this area Valley Water Company and
24 La Canada Irrigation District.

25 Generally, the groundwater flows in this

4

1 direction. And what we've found over the course of
2 our investigation is that we've picked up
3 contaminants in several of these wells as well as
4 our own. And basically, we've completed all of the
5 investigative work that we had planned, and the
6 results have come out. And I'm only going to spread
7 these on the table for the benefit of the folks to
8 take a look at.

9 What we've found is that the aquifer is
10 actually broken up into three layers that are
11 important to the site. There's actually four that
12 we've found. The fourth layer, which is the deepest
13 layer, you don't see that occurring until you're
14 well out in the area of MW-20, which is in the far
15 lower right-hand corner of the site.

16 (Ms. Melnyk Vecchio entered the room.)

17 BURIL: And as a result, we don't really deal
18 with that one because we don't see contamination in
19 that area.

20 We've just had another person come in.
21 Vera, I forgot your last name.

22 VECCHIO: Melnyk Vecchio.

23 BURIL: Did you get that, Mark?

24 RIPPERDA: No.

25 BURIL: Welcome. We're just kind of going

5

1 through a little bit of the site and a little of the
2 history.
3 What we found principally were three
4 volatile organics that appeared that there might be
5 some concern with, and one inorganic constituent,
6 perchlorate. What I'm going to do now is just show
7 you the results as a series of plume maps. I'm
8 going to use the most recent ones that we had, which
9 are from January and February of 1998.

10 What we did is we broke these down
11 according to the various chemicals and three aquifer
12 layers that we found to be impacted by the various
13 constituents.

14 Let's see. Joe, I don't know if you want
15 to come down here. You can maybe see a little
16 better. You can kind of get a feel for it. All
17 these guys have seen these. And Vera and Gary can
18 have a look at what I'm dealing with here, too.

19 What I'm looking at first, Mark, is the
20 aquifer 1 -- excuse me, aquifer layer 1 carbon
21 tetrachloride plume map. Basically, it shows that
22 everything is right here on the site and doesn't
23 appear to be, you know, much of a problem when you
24 look at it from that perspective.

25 When we get past aquifer layer 1 and we go

6

1 down to aquifer layer 2, what we find is that the
2 municipal wells in the area have a fairly dramatic
3 impact on the distribution of the contaminants in
4 the area.

5 Here is carbon tetrachloride for the same
6 time frame in the second layer.

7 What appears to be happening is that the
8 Pasadena wells, based on tests that we've been able
9 to do in monitoring water levels and such, the
10 Pasadena wells, particularly the Arroyo Well, appear
11 to have the ability to draw the contaminants down
12 through the layers and into the second aquifer
13 layer. And, in fact, I think the first layer and
14 second layer division --

15 Isn't the aquifer portion that's got the
16 fine silt, isn't it kind of thinned out, almost gone
17 in the area of JPL?

18 CUTLER: Yeah. Right. It's almost on their
19 eastern boundary of JPL, about where that boundary
20 stops.

21 BURIL: Okay.

22 CUTLER: So right from the eastern boundary to
23 the east is where it's really defined as two layers.
24 From that boundary west it's really one --

25 BURIL: It's kind of mixed.

7

1 CUTLER: -- big pile of sand, basically.

2 BURIL: The distinction in layers here on the
3 site, it doesn't really exist that much, yeah,
4 which is why we see the movement like this, I think,
5 being so pronounced.

6 You can see the various municipal wells
7 there.

8 Again, this is for carbon tetrachloride.

9 This is a constituent that we view as somewhat
10 unique to JPL because we haven't found it anywhere
11 else.

12 YAMAMOTO: Okay. In other words, nothing
13 upstream.

14 BURIL: Nothing that anyone has found upstream
15 thus far.

16 On the third layer we see an interesting
17 kind of distribution in so much as we don't see
18 anything really on site, with the exception of Well
19 12. But then you see how it's been pulled around by
20 the various water supply wells.

21 Moving on to --

22 YAMAMOTO: The third layer exists on the JPL
23 site?

24 BURIL: The third layer does exist on the JPL
25 site, but there's no contamination there that we can

8

1 find.

2 YAMAMOTO: There's a clay or something like
3 that?

4 BURIL: A silt-rich area there that helps define
5 the two layers, 2 from 3 on the JPL site.

6 Am I correct on that?

7 CUTLER: Right. The way that we look at this is
8 that aquitard between layers 2 and 3 almost extends
9 to the western edge of the site. So if you're
10 looking at the site -- this will just take a second,
11 Chuck.

12 BURIL: Sure.

13 CUTLER: The aquitard between layers 1 and 2
14 maybe extends up to about in this area. Between 2
15 and 3 it extends all the way up to maybe this area.

16 And then over here it's one big pile of
17 sand almost all the way to bedrock, if that makes
18 sense.

19 YAMAMOTO: Yeah.

20 CHRISTMANN: Can you give a little explanation
21 of what the less permeable materials are in
22 comparison to the more permeable stuff?

23 CUTLER: It's more the silts, maybe a little bit
24 of clay in the silts. It's fairly coarse material
25 out here. The way these layers are defined, we have

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1 these multi-port wells with screen intervals at five
 2 different depths in the aquifer. When these
 3 production wells are on, they induce a vertical
 4 downward flow and that flow gets inhibited by these
 5 silt-rich layers. So depending on what screen
 6 you're in is defined by how much that drawdown is
 7 inhibited, or enhanced. This may be confusing.
 8 It's defined by hydraulic head.
 9 YAMAMOTO: In each of those layers.
 10 CUTLER: With depth. Right.
 11 BURIL: The thing that tipped us off to the fact
 12 that this was occurring was that when we measured
 13 the water levels in the various screens and water
 14 pressures in the various screens in the wells, while
 15 the municipal wells were operating, we saw pretty
 16 large changes in the head, which we couldn't explain
 17 any other way.
 18 YAMAMOTO: Sure.
 19 BURIL: Then when we went through the drill logs
 20 and started looking at it, we realized that there
 21 were these silt-rich layers that appeared to be
 22 creating this inhibited flow between the different
 23 places, different layers.
 24 YAMAMOTO: Right.
 25 HWONG: I'm sorry. What is the thickness of

10

1 those layers 1, 2, 3 you talk about, the thickness?
 2 BURIL: Thickness of the layers?
 3 CUTLER: The upper aquifer layer is about from
 4 the water table down about 100 feet.
 5 HWONG: 100 feet?
 6 CUTLER: The second aquifer layer is from that
 7 100 foot depth down another 150 feet. And the third
 8 aquifer layer -- and this varies. This is just in a
 9 general sense. The third aquifer layer is about 300
 10 feet thick.
 11 ROBLES: So you got 100, 150 and 300.
 12 CUTLER: In general terms.
 13 BURIL: They vary in thickness depending --
 14 HWONG: Those downgradient wells -- I mean the
 15 municipal wells, they screen all the way from the
 16 first layer to third layer?
 17 CUTLER: That is variable. Right. And that's
 18 another issue, is we don't know which layer gets the
 19 most water produced from when these wells are on.
 20 They're screened in multiple layers. We don't know
 21 where a well gets most of its water.
 22 ROBLES: So we don't know if the water is coming
 23 from a minimally contaminated aquifer or maximumally
 24 contaminated aquifer.
 25 CUTLER: Yeah. Right.

11

1 BURIL: We don't have the distinction with these
 2 long screened interval wells as to which portion of
 3 the screen is actually producing the most water.
 4 ROBLES: Do purveyors of water have multi-port
 5 wells, too?
 6 BURIL: No. They are not designed to do
 7 discrete layer sampling. They are just designed to
 8 take water from the most permeable zones they were
 9 able to identify at the time.
 10 ROBLES: There's usually one or two.
 11 BURIL: I think the Arroyo Well has got like
 12 four or five screened intervals, doesn't it?
 13 CUTLER: Yeah. They're multiple screens.
 14 Depends on the well. They would pick and choose
 15 sandy intervals. There may be up to 20 individual
 16 screened sections of the well.
 17 ROBLES: So any water coming out of those
 18 production wells could come from any one of the
 19 aquifers anywhere. Okay.
 20 BURIL: What I've got up here now is layer 1 for
 21 trichloroethene. This one is kind of interesting
 22 because we appear to have what looks like an
 23 upgradient source in addition to the JPL source.
 24 You can see that some of the wells up here have the
 25 small quantities here. We have seen larger

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1 quantities on occasion, I believe, haven't we, Mark,
 2 or are these the largest ones that we have records
 3 of?
 4 CUTLER: I'm sorry?
 5 BURIL: For the upgradient wells, the Valley
 6 Water wells.
 7 CUTLER: Well, that's in that time frame when we
 8 did the sampling on site. That was the levels
 9 closest to when we took our samples.
 10 BURIL: Okay. We have seen higher levels than
 11 this. And this is the 1996 time frame. Let me show
 12 you the most recent one that we have.
 13 Here is the January-February '98. Very
 14 similar, where down here at MW-21 we see 16 parts
 15 per billion, but yet we see 150 here at our Well
 16 MW-24 and it fades off to just about nothing. And
 17 they have seen concentrations at this end in the 10s
 18 and higher. So we think that there's good
 19 indication that there may be something coming from
 20 down here. There's more to it than just that.
 21 We've also done some water type tests, mineral
 22 analysis, things of that nature. And the water
 23 types located at this well tend to match those up
 24 here rather than the water types that we see here.
 25 The water type that we see here is principally

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1 either sodium or calcium calcite, is it?
 2 CUTLER: Carbonate.
 3 BURIL: Carbonate. Thank you. Carbonate type
 4 water, where over here it's more characterized by
 5 higher quantities of sulfate and --
 6 CUTLER: Chloride.
 7 BURIL: And chloride. Thank you.
 8 CUTLER: One quick note, too, Chuck, when we
 9 look at the organic levels in the production wells,
 10 keep in mind that they're screened over several
 11 hundreds of feet, plus these samples are collected
 12 with turbine pumps. So we use numbers, TCE
 13 concentration values, as an indication that TCE is
 14 there, not so much that the level is accurate
 15 compared to the way we sample. So that 10 part per
 16 billion could actually be higher upgradient. We're
 17 using the fact that there is TCE upgradient, not the
 18 fact that it's 10. It's an important point, I
 19 think, when we get into some of our discussions.
 20 YAMAMOTO: The City hasn't made any attempt to
 21 try to do sampling at --
 22 BURIL: At various levels, no.
 23 CUTLER: Not that we're aware of.
 24 BURIL: No, not that we're aware of, at least.
 25 When we look at the second layer for the

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1 same time frame in '98, you can see that we've got
 2 still small amounts of contamination showing up here
 3 and nondetect pretty much throughout the Laboratory,
 4 with the exception of a minor hit at the most
 5 contaminated well that we have. And we're still
 6 using the same numbers that we used before.
 7 The interesting thing is that we see a
 8 little bit bigger concentrations right out in the
 9 middle of this. It appears that the JPL influence
 10 is beginning to dwindle, but this is still out
 11 there.
 12 HWONG: So those upgradient wells, they're
 13 operating, right? They're still pumping water?
 14 BURIL: Yes. They actually have an air stripper
 15 associated with some of these.
 16 YAMAMOTO: VOCs handle them. Probably can't
 17 determine which --
 18 BURIL: They can't figure out where it's coming
 19 from. Neither can we.
 20 YAMAMOTO: Right.
 21 BURIL: The last layer is very similar to layer
 22 2 as far as trichloroethene is concerned, but in
 23 this case basically everything is out of JPL. There
 24 is no contribution occurring, but we're still seeing
 25 contamination down deep in layer 3 out to the east

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1 of us. And we still think there's something to the
 2 west of us that's contributing to that.
 3 The last volatile that we think is a
 4 concern potentially for the JPL site is
 5 1,2-dichloroethane. Looking at the latest one of
 6 that, this was one that appears to be only on site.
 7 And, in fact, you can see just this tiny little blip
 8 on the map around MW-7, which is one of our more
 9 contaminated wells. We're thinking that this is a
 10 byproduct of some form of degradation of TCE because
 11 we're not seeing it any place else except here on
 12 site.
 13 And in aquifer layer 2 -- in fact, it
 14 wasn't in any other aquifer layer. That's why I'm
 15 not seeing a 1998 map. This is what it was in 1996.
 16 It just shows this tiny little area right here, a
 17 little .9 ppb. Everything else was clean.
 18 CHRISTMANN: You said that was 1,2-DCA, Chuck?
 19 BURIL: Yes. 1,2-DCA.
 20 CHRISTMANN: Have you ever evaluated the
 21 possibility that that was -- were there any fuel
 22 tanks, gasoline tanks? Because that one has been
 23 used as a fuel additive in the past.
 24 BURIL: We have had underground tanks here at
 25 JPL, but when we pulled them here to meet the new

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1 tank standards, we didn't find any contamination.
 2 So we're hopeful that we didn't have any problem
 3 like that.
 4 CHRISTMANN: Okay.
 5 BURIL: Tetrachloroethene is one that is also
 6 present in the groundwater. This is the one that we
 7 think gives rise to some real thoughts to having
 8 upgradient sources. Because here, this again is in
 9 '96. Let me get the '98 one. Hold on.
 10 Because here we're seeing concentrations
 11 in these wells here that are far higher than
 12 anything we've ever seen on site by an order of
 13 magnitude, sometimes several orders of magnitude.
 14 And so there appears to be something contributing,
 15 at least in aquifer layer 1, to the overall plume.
 16 And on occasion it impinges on JPL. And we're
 17 seeing these smaller numbers as a result.
 18 You get out here, it tends to die off
 19 except that Las Flores here has got a hit of -- what
 20 is that, 4.8 parts per billion. I think at one time
 21 they actually exceeded 5 and had to shut down for a
 22 period of time.
 23 Looking at the tetrachloroethene again on
 24 the second layer, you can see the influence of JPL
 25 has all but disappeared. We see small hits on the

17

1 wells to the south of us, but we're still seeing
 2 hits in our Well MW-21, which is in Oak Grove Park,
 3 still have -- using the same numbers again there.
 4 Now we're picking up hits in the other production
 5 wells as well as our Well MW-19.
 6 So there appears to be some influence
 7 going on out there that is introducing
 8 tetrachloroethane into our area that is simply not
 9 part of JPL's issue.
 10 And then last, to point out just to
 11 complete the aquifer layers, here is aquifer layer
 12 3. You can see again it's still quite prevalent.
 13 But in this particular instance JPL has nothing in
 14 it at all.
 15 YAMAMOTO: Wasn't the upgradient communities on
 16 septic tank and leach fields?
 17 BURIL: Yes.
 18 YAMAMOTO: There's a common septic tank cleaner
 19 by Amway had lots of PCE in it.
 20 BURIL: In fact, my own in-laws lived in
 21 La Canada for almost 40 years and they described
 22 using exactly what you're talking about to keep
 23 their septic tank working properly.
 24 CHRISTMANN: The other issue that we've
 25 discussed with JPL previously, and we're pursuing,

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1 is the fact that there are a number of dry cleaners
 2 located directly adjacent to those wells that are
 3 upgradient.
 4 VECCHIO: And they're still unsewered, Gary.
 5 BURIL: Yeah, they're still unanswered. I have
 6 apparently left behind my perchlorate maps. They
 7 look very similar to the PCE maps. But we do have a
 8 strong source here.
 9 ROBLES: Do you need a copy?
 10 BURIL: Do you have it here? Yeah. If I could
 11 get you to get that, that would be great. I just
 12 grabbed these out of my own copy here and I guess I
 13 didn't grab a thick enough stack.
 14 They're very similar to the PCE results --
 15 rather, TCE results. So you see both an influence
 16 from off site and an influence from on site.
 17 The off-site influence appears like it
 18 might be associated with the injection of Colorado
 19 River water that's done by Valley Water Company. We
 20 can actually see that on there, which is not good.
 21 YAMAMOTO: Well, actually, what you could use as
 22 a tracer, because you've got Colorado River water,
 23 there's an awful lot of sulfate in it and use that
 24 as a tracer.
 25 BURIL: We've actually picked that up and we've

19

1 done exactly what you're talking about in making
 2 that evaluation.
 3 Thanks, Pete. Let me pull this out.
 4 ROBLES: Here it is.
 5 BURIL: Here is perchlorate in aquifer layer 1.
 6 ROBLES: Yes.
 7 BURIL: Where we appear to have some influence
 8 up here, because we are seeing 14 parts out here in
 9 Well 21. And we are picking up small amounts out
 10 here in the Valley wells. We have a pretty strong
 11 source up here. We've seen as much as 700 and 1200
 12 parts per billion up here in JPL.
 13 VECCHIO: This is the first layer here?
 14 BURIL: Yes, it is.
 15 VECCHIO: And we've got some hits over here at
 16 Rubio and Las Flores.
 17 BURIL: That's something that, being
 18 discontinuous as it is and not having a -- well,
 19 basically having a long line of monitoring wells
 20 which show no contamination, leads us to believe
 21 that there may be other considerations in dealing
 22 with this. Maybe use of Colorado River water over
 23 the years is one possibility. We've found that
 24 commercial fertilizers also contain perchlorate,
 25 which I think you guys are probably well aware of.

20

1 VECCHIO: Yeah.
 2 BURIL: So that use may have contributed to
 3 seeing this out here.
 4 VECCHIO: I think Rubio also has these ASR wells
 5 which are -- where they actually inject back into
 6 the aquifer when they are not using --
 7 BURIL: Oh, really?
 8 VECCHIO: Yeah. I think Rubio has one of those.
 9 BURIL: I didn't know that.
 10 ROBLES: So that could be a source of
 11 perchlorate there, that they reinjected something
 12 that might have had an impact.
 13 VECCHIO: Because I know Pasadena has them and I
 14 know that Rubio was a site. They had a well right
 15 at their company door. They were going to do that.
 16 But I haven't worked with them, you know, for quite
 17 a while so I don't know what's going on there.
 18 BURIL: Here is aquifer layer 2. And it shows a
 19 very similar pattern to TCE where we have the low
 20 concentrations apparently coming in from upgradient
 21 and very strong influence here being exerted on the
 22 contaminants on JPL.
 23 I'll share with you that the Arroyo Well
 24 has been shut down now since July of '97 and it's
 25 still shut down.

21

1 ROBLES: What was it shut down for?
 2 BURIL: Perchlorate.
 3 VECCHIO: Perchlorate.
 4 ROBLES: How much?
 5 BURIL: Over 140 the last time they tested.
 6 ROBLES: Has it gone down?
 7 BURIL: They don't run it to find out. They
 8 don't have any way of dealing with the water when
 9 they pump it out.
 10 ROBLES: So we don't know if it's gone down.
 11 BURIL: We don't know if it's gone down, up, or
 12 stayed the same. They don't monitor it when it's
 13 shut down. We have seen -- in our own Well 17, we
 14 can see it. It's still up around in the 20s and 30s
 15 parts per billion.
 16 ROBLES: What happens if it goes away? They can
 17 turn it back on. How do they know that?
 18 BURIL: That's a good question. I don't know.
 19 VECCHIO: The more likely scenario is that the
 20 plume is moving. Those levels have probably not
 21 gone down. They can also see a trending upward in
 22 Well Number 52.
 23 BURIL: Thank you. I was just going to mention
 24 that. Well 52, it shows a 15 part per billion here.
 25 They have the southernmost wells shut down right now

22

1 for maintenance. The last information I got from
 2 City of Pasadena indicated that Well 52 was up into
 3 the mid 40s, I think it was.
 4 VECCHIO: Right. And that's trending upward.
 5 BURIL: Right.
 6 YAMAMOTO: How about Lincoln? They were --
 7 BURIL: Lincoln's wells are surprisingly clean.
 8 YAMAMOTO: Gone down now after they were -- they
 9 were going to go over.
 10 BURIL: Yeah. We are mystified by that, as I
 11 think Lincoln is, but we're grateful for it at the
 12 same time.
 13 Here is layer 3, again showing some
 14 contribution out here, and then with the Arroyo Well
 15 and Well 17, and basically nothing coming off the
 16 JPL site. Again, with Rubio Canyon and so forth out
 17 here.
 18 I've just tried to give you the capsule of
 19 what we've got as fast as I could here because this
 20 is, as you can tell, a pretty complex site. And
 21 there are a number of other factors that go into the
 22 analysis that we've done that I haven't taken the
 23 time to explain.
 24 Before I move on beyond this, do any of
 25 you folks who are new to the project, or anyone

23

1 else, have questions about what we've shown you so
 2 far?
 3 Okay.
 4 ROBLES: I just wanted to clarify. This is the
 5 well that has been shut off right here. Right?
 6 BURIL: Yes. Correct.
 7 ROBLES: There is no perchlorate in the Lincoln
 8 wells?
 9 BURIL: There's some, but it's not high enough
 10 to be an action level issue.
 11 ROBLES: What about these three?
 12 BURIL: Well 52, which is the next one down from
 13 Arroyo, is in the mid 40s right now. That one is
 14 under 18 but slowly climbing, and that one is, I
 15 think, just about completely clean.
 16 ROBLES: So these two are shut off?
 17 BURIL: All four of them are shut off right now
 18 because they're doing maintenance. What I've been
 19 told is they can't run Well 52 without Ventura and
 20 Windsor running as well because they can't blend
 21 down to below the action level. They cannot run
 22 Arroyo at all because they cannot generate volume
 23 sufficient enough to blend.
 24 VECCHIO: Right.
 25 ROBLES: Okay.

24

1 VECCHIO: Because they all go into one
 2 reservoir, Windsor Reservoir, and then they have to
 3 blend with purchased water from MWD. They were
 4 relying on actual blending with the wells, but
 5 that's no longer a viable alternative.
 6 BURIL: Right. Okay.
 7 The reason that we asked the folks from
 8 DHS to come in and help us today is we're right now
 9 on the point of doing a feasibility study for the
 10 JPL site. And we've gone through a number of
 11 scenarios trying to identify something that would be
 12 useful in terms of meeting all the requirements, the
 13 ARARs that are imposed on this, and maybe in the
 14 process allow Pasadena or others to either begin
 15 operating again or continue operations as time goes
 16 by.
 17 We've come up with what we think is a
 18 pretty good solution. We thought it was pretty good
 19 up until the point where I was at that Raymond Basin
 20 Management Board meeting where you introduced this.
 21 I understand that it was done a couple of years ago,
 22 about 18 months ago, it looks like, but none of us
 23 had ever heard of the policy and it looks like it
 24 has some potential impact to everything that we're
 25 thinking of doing.

25

1 What I'd like to do is to give you a
 2 little bit of an overview of what the remedial
 3 option is that we're thinking of right now in
 4 concept and then just turn it back to you and say
 5 how would this policy work in trying to implement
 6 something like that.

7 Okay. Basically, we've got a two-pronged
 8 approach that we're thinking of trying to use here
 9 at JPL. The first prong of the approach deals with
 10 dealing with the on-site contamination. And we are
 11 thinking that we would install a pump-and-treat
 12 system for the JPL site itself. It would be sized
 13 somewhere around 500 gallons a minute. We would
 14 treat for all the constituents that are of concern.
 15 So we would have both VOC and perchlorate treatment
 16 to knock those constituents out.

17 The ultimate disposal of the water would
 18 either be through reinjection back into the aquifer
 19 or turning it to one of the water purveyors in the
 20 area, possibly City of Pasadena, Lincoln Avenue,
 21 anyone who would reasonably feel comfortable taking
 22 it, and we would have permission to do so.

23 ROBLES: The decision would be made by Raymond
 24 Basin, whether they want it or whether we can
 25 reinject it.

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1 BURIL: Or just what would happen with that.
 2 The second part of this is trying to deal
 3 with the migration of material that's already off
 4 the site, and also to restore the aquifer as
 5 required by the NCP.

6 There we're looking at using the well
 7 at -- rather the Arroyo Well for Pasadena, either
 8 that specific well or a well that we might install
 9 ourselves. We would have that sized sufficiently to
 10 basically capture anything that is beyond the
 11 500-gallon a minute well, as well as prevent
 12 anything that's to the east of the Arroyo from
 13 migrating any further.

14 The water would be treated either through
 15 the existing VOC plant or perhaps through a separate
 16 plant, depending upon how the configuration of this
 17 goes. And the water then would be also treated for
 18 perchlorate and then it would be turned over to a
 19 water purveyor, or reinjected.

20 Now, that's kind of the large concept
 21 idea. When it comes right down to it, our specific
 22 goal would be to have just the Arroyo Well being
 23 treated for perchlorate, and whatever other ones
 24 still require VOC treatment, they would continue to
 25 receive that. All the water would be turned over,

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1 more than likely, to Pasadena for drinking water
 2 use. And the hot spot reduction, as we call it, at
 3 the JPL site would also have a separate plant, but
 4 then that water would also be turned over to the
 5 City of Pasadena for drinking water use.

6 That is our best-case scenario in terms of
 7 remediation of the area. And there are numerous
 8 variations on that theme.

9 Now, the big concerns, of course, are
 10 public acceptance, acceptance by the City of
 11 Pasadena, because we have not really broached this
 12 with them yet. We wanted to deal with the folks in
 13 the regulatory areas first before we broach the
 14 entire subject with the City of Pasadena, to learn
 15 what constraints there might be on us for doing this
 16 kind of thing, which is where 97-005 steps right
 17 into the picture as to what would be required to do
 18 something like this.

19 ROBLES: The second thing is that by reading the
 20 guidelines, we feel worst case would be is to have a
 21 closed-loop system, which would basically have an
 22 on-site system, have some wells out there in the
 23 Arroyo Seco, pump it back so that a closed-loop
 24 system exists. So therefore, no water would be
 25 given to the purveyors and it would stay as cleaned

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1 for all of the constituents and thereby -- because
 2 as we read it, we can't give water out. First of
 3 all, we wanted you to give us an idea of what you
 4 think that impact is going to be of this policy.

5 BURIL: If you could walk us through the policy
 6 itself. We can read it. It's kind of scary, quite
 7 honestly, in some of the things that we're talking
 8 about. If you can give us some indication of how
 9 certain of these things might apply, it would help
 10 us a lot.

11 We're really at a point right now where
 12 this policy is going to help us or hinder us,
 13 depending upon how we interpret it, in implementing
 14 a remedial action, because it's going to perhaps
 15 tell us that we have to have more treatment, that we
 16 have to do potentially other work, any number of
 17 things, and trying to understand how you folks are
 18 interpreting and implementing it is key.

19 YAMAMOTO: Sure. Well, you brought some and
 20 I've got some, so -- copies of the policy. So that
 21 probably is a starting point.

22 This policy in some areas can be a
 23 hindrance. I would say in areas like in Northern
 24 California, where they have plenty of water around,
 25 this policy is intended to be a hindrance to it.

29

1 Okay? Because if they have available water nearby
 2 that they can easily go to as far as not having to
 3 run around supplies, that's what they should be
 4 going to.
 5 In Southern California it's a little bit
 6 different since we've got probably more people and
 7 more people coming than we can supply. So that as
 8 more contamination is found, resources become
 9 depleted and it isn't so easy to say throw that
 10 away.
 11 However -- so this policy isn't a
 12 hindrance, but however, it's a policy we feel you
 13 need to go through so that when it comes down to the
 14 point of approving a project, that people that are
 15 getting this water can feel confident that it's
 16 acceptable and whatever, that it's gone through some
 17 kind of review process or evaluation, okay, and
 18 that's why at the end there's a public hearing.
 19 So even though we may all do and we may
 20 say it's 100 percent okay, if the people don't want
 21 it, then that's the end of it. Okay? That has
 22 happened in a community up in the Silicon Valley
 23 where they treated for actually a chemical that's
 24 not even a carcinogen. It's 1,2,3-trichloroethane.
 25 Our standard is I think 200 parts. And they were

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1 treating it down to nondetect. But the people did
 2 not want that water. It all ended up a million or 2
 3 million gallons of water being pumped to the ocean
 4 or San Francisco Bay every day.
 5 BURIL: Is this Santa Clara?
 6 YAMAMOTO: Yeah. Santa Clara. I think it was
 7 IBM and Fairchild Chemical. So that's an example
 8 where we're not going to go get in between telling
 9 people they have to take this water. Otherwise, we
 10 would probably be run out, our department would
 11 cease to exist or something.
 12 So that's one of the things that whatever
 13 city or utility gets involved in receiving it,
 14 that's probably going to have to be part of what
 15 they're going to have to do as far as the program,
 16 is to try to do a PR program.
 17 ROBLES: The utility.
 18 YAMAMOTO: The utility and everybody else. You
 19 know, in this case if it's in the Raymond Basin,
 20 they probably should also help participate. We
 21 already have one reclamation project killed because
 22 they didn't do thorough publicity and some angry
 23 people got up there and killed the project. So
 24 those things can happen.
 25 So that's one precaution I would warn

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1 whatever. And so that the sooner you can identify,
 2 you know, where the water is going to go and the
 3 sooner you can work on that. And, you know, I
 4 presume, since this is a Superfund project, there's
 5 already a PR and so --
 6 ROBLES: We have to do those things.
 7 YAMAMOTO: -- you just probably need to expand
 8 that to try to, you know, point out the necessity.
 9 ROBLES: Have public meetings anyway.
 10 BURIL: Could you elucidate for me just a little
 11 bit about how you handle wells in the area of JPL or
 12 how you would think of handling the wells in the
 13 area of JPL.
 14 Say we have like the Arroyo Well that is
 15 contaminated, and yet when you go a little further
 16 out you've got Lincoln Avenue, which really doesn't
 17 show much of anything in terms of perchlorate.
 18 One of the more troublesome portions of
 19 this talks about having to treat the entire flow
 20 from the source. I guess the questions that I have
 21 relate to what do you consider "the source"? And
 22 when you talk about treating the entire flow, are we
 23 talking about the entire flow from individual wells
 24 or from the source overall from any well?
 25 YAMAMOTO: It was intended for individual wells.

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1 What some people wanted to do was treat part of the
 2 flow and then blend it to meet the limit.
 3 BURIL: So a 2,000-gallon a minute well, split
 4 the flow and only treat half?
 5 YAMAMOTO: Something like that.
 6 VECCHIO: Right.
 7 YAMAMOTO: Then we would say no, treat the
 8 2,000.
 9 BURIL: I see. So it's applied on an individual
 10 well basis as opposed to a basin wide.
 11 VECCHIO: Right. Basin-wide cleanup for that.
 12 YAMAMOTO: So in this case what would have to
 13 happen is -- you've done some of these. That is, we
 14 would want a source water assessment. It's
 15 identifying what has been contaminated, where the
 16 plume is and where it might also go, you know, so
 17 that what you've got to sort of do is, you know,
 18 sort of indicate what sources may be impacted.
 19 Since this is for cleanup, then this
 20 policy will fly, even though maybe on an individual
 21 well it may not by its level of concentration unless
 22 it's somehow not pictured that it's part of the
 23 area. Like if you decide to draw like a containment
 24 well at Arroyo and so that it can't get to Lincoln,
 25 then we can exclude Lincoln. But you're going to

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1 have to somehow convince us, yeah, it won't get to
 2 Lincoln's well.
 3 ROBLES: Now, the key question, though, is,
 4 Gary, we've been focusing on our contamination --
 5 YAMAMOTO: Right.
 6 ROBLES: -- that emanates from our site because
 7 the site is the NPL site and anything that emanates
 8 from there. We've made it a statement, we've stated
 9 in minutes. When we set up remediation if we happen
 10 to pick up other contamination not from our source,
 11 for example, the PCE plume that's coming out of
 12 Flintridge, and we treat it with our system we're
 13 not going to say no, because you can't tell one
 14 molecule from another.
 15 But the policy indicates that we have to
 16 consider other sources of the resource of that well.
 17 For example, the Arroyo Well is not just impacted
 18 with contamination that is generated from this site,
 19 but from maybe other sites. And so do we have to
 20 include that?
 21 Now, we're going to include it. You know,
 22 the level comes out there, says perchlorate is this
 23 level. Whether it's all ours or not, we're going to
 24 shoot for that because our main goal is to get
 25 Pasadena back into operation. But if we have, for

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1 example, a Lincoln well, all of a sudden we see a
 2 contamination there at the far end and we know it's
 3 not ours, what do we do?
 4 YAMAMOTO: Well, I would expect whoever -- I
 5 don't know who is the lead on this project, EPA or
 6 Regional Board, that they would somehow address that
 7 plume -- I mean they will not go after just JPL, but
 8 they will go after everybody.
 9 ROBLES: So I would have to go after other
 10 people's plumes that doesn't emanate from my site?
 11 VECCHIO: No. The Regional Board would have to
 12 take action in terms of -- for example, you're going
 13 to have to pay for treatment.
 14 ROBLES: Right.
 15 VECCHIO: Okay. So there are -- you know,
 16 there's the actual treatment process. There's the
 17 O & M costs. Okay. If there is somebody else that
 18 is a contributor, you become a responsible party and
 19 you pay your cost. That is a job for EPA and it's
 20 part in the Superfund cleanup. Okay.
 21 We -- what we handle is -- we don't care
 22 who contributed. Okay. All we care about is that
 23 the treatment provided is going to be reliable and
 24 that you're going to produce a safe water and that
 25 it's going to be delivered to customers. Okay.

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1 So we don't get -- we personally don't get
 2 involved with that part. That's either EPA or it
 3 gets delegated down to the Regional Board or to
 4 Toxics.
 5 ROBLES: What I'm getting at is, we know that
 6 there's major plumes that are coming here.
 7 YAMAMOTO: Right.
 8 ROBLES: So we would deal with that. But
 9 remember, some of the maps show there's a plume down
 10 here.
 11 VECCHIO: Right.
 12 BURIL: And there's stuff coming from up top.
 13 VECCHIO: And there's stuff coming from up top.
 14 YAMAMOTO: The only one I would worry about now
 15 is because you've got a commingling of the plumes is
 16 what's --
 17 ROBLES: Is this right through here.
 18 VECCHIO: Right.
 19 YAMAMOTO: Yeah.
 20 ROBLES: See, because I don't delineate. I'm
 21 not going to say I'm not going to treat anything
 22 coming off Las Flores, but if it gets to these wells
 23 and we have a treatment, we're going to deal with it
 24 because we can't distinguish.
 25 VECCHIO: Right.

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1 ROBLES: This down here, we can show that there
 2 is no connection.
 3 YAMAMOTO: As long as you don't show there's a
 4 connection. I don't see one right now.
 5 ROBLES: Okay.
 6 YAMAMOTO: The only thing that might happen is
 7 if one -- let's suppose JPL has cleaned up their
 8 site, but the off-site, you know, from La Canada is
 9 continuing on. The question is, you know, JPL may
 10 say "Why should we continue? We've cleaned up our
 11 site." That's actually a concern of ours in task
 12 number 3, is that there needs to be some way that
 13 whatever the sources are, that they're somehow
 14 getting reduced. And so if something needs to be
 15 done -- if something hasn't been done for what's
 16 coming from La Canada.
 17 BURIL: Let me ask you this, Gary. The
 18 upgradient sources, whatever they may be, in order
 19 to initiate a remedial action that utilizes, say,
 20 Pasadena wells or something like that, would it be
 21 part of the requirement for obtaining the permit
 22 that someone, whoever that might be, would need to
 23 go into La Canada and determine where those sources
 24 are prior to the issuing of that permit?
 25 YAMAMOTO: Yeah.

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1 ROBLES: See, the key area, Gary, is that CERCLA
 2 does not require us to get a permit. CERCLA says we
 3 have to meet permitted requirements through the
 4 ARARs.
 5 YAMAMOTO: Yeah.
 6 ROBLES: We don't purvey water.
 7 YAMAMOTO: Right.
 8 ROBLES: The purveyors of water would need a
 9 permit. But ultimately if they had to do this,
 10 they're going to come to us for help. And since
 11 we've done most of the work, we've done a
 12 feasibility study, we've done risk assessment. But
 13 then to expand it, this is where our problem is. To
 14 deal with the whole Raymond Basin, they'll come to
 15 us and say "Study the whole Raymond Basin." We'll
 16 say "We can't." That would be there.
 17 Now, we would help in the sense that we
 18 would work with them to have a treatment system that
 19 handles this commingled plume because we're not
 20 going to delineate that. Like I said, if we happen
 21 to take anything else in the future, there'll come a
 22 time when we may say, "Hey, we've done our fair
 23 share." We'll still pay it. We'll have to work
 24 that out then. But as long as we're -- we'll put in
 25 the capital investment and everything else.

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1 But the key question is what do we do up
 2 here? What do we do down here? And those people
 3 may come back and impact us because their comments
 4 have been "It's the government."
 5 YAMAMOTO: Unless there is a direct correlation
 6 downstream, I would say there isn't, you know, and
 7 therefore -- but right now I haven't seen anything
 8 that tells me there isn't one, but the upstream.
 9 And you'd have to -- you know, otherwise, you know,
 10 you're going to be treating this forever.
 11 ROBLES: Right.
 12 BURIL: So in one way, shape or form, then, in
 13 order for NASA/JPL to initiate a remediation
 14 utilizing the water from the Arroyo Well and then
 15 supplying that to Pasadena, let's just say, for
 16 drinking water, that assessment of the upgradient
 17 sources would have to be complete and understood
 18 prior to you folks issuing the permit to the water
 19 purveyor to do what we're talking about doing.
 20 YAMAMOTO: Yeah. Unless you've -- what you
 21 could have is, you could have this being done in
 22 phases. Okay. So that you could do the on-site in
 23 Arroyo with the idea you still got more time to --
 24 you know, you need more time to go investigate the
 25 upstream. But that's still with the idea that

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1 that's going to be part of the overall solution.
 2 BURIL: When you say "phases," are you saying
 3 that we could initiate treatment prior to -- knowing
 4 that someone would have to go forward and do the
 5 remainder of the assessment upgradient, or would we
 6 have to have the phase of assessment done first,
 7 before the treatment?
 8 YAMAMOTO: Enough of that just so I know. And
 9 then you may not have marked out exactly how you're
 10 going to deal with that, you know. Or you may not
 11 have identified all, or it may turn out if it's the
 12 septic tanks or whatever and your solution may be
 13 that the community needs to be sewerred, in that case
 14 that is going to take time. And that may be
 15 politically difficult too, you know.
 16 ROBLES: Because sometimes the solution may be
 17 beyond our scope. It's something that belongs to
 18 the municipality that we have no control over.
 19 YAMAMOTO: Well, that's where Vera and I were
 20 mentioning that if it's the septic tanks, then that
 21 community becomes -- as far as I'm concerned, it's
 22 the responsible party and they've got to pony up
 23 their share of the cleanup.
 24 VECCHIO: Of the costs. Yeah.
 25 ROBLES: Two items. If water is given to, let's

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1 say, like Pasadena, then they would need a permit.
 2 If water is not given to them, we just have a
 3 closed-loop system.
 4 VECCHIO: What do you mean by a closed-loop
 5 system? Is that just injecting?
 6 BURIL: Just reinjecting.
 7 ROBLES: Reinject. What we were looking at --
 8 VECCHIO: Because a closed system to me would be
 9 taking that water, treating it and using it on site.
 10 BURIL: No.
 11 ROBLES: We can't do that because it's
 12 adjudicated water.
 13 VECCHIO: Okay.
 14 ROBLES: What we were looking at, as we read the
 15 policy, was to have our own wells, new wells that we
 16 would put in here and have an on-site treatment and
 17 inject the clean water here and then pump it back
 18 out here and send it back through the system and
 19 keep doing that over and over again. So, therefore,
 20 we have at the end of the plume, so we would suck
 21 back up anything this way and keep control of the
 22 plume so there would be this area here.
 23 BURIL: We would also influence the area to the
 24 east as well, Pete, because the radius of influence
 25 would reach out to there.

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1 ROBLES: Right. And that's what we mean by
 2 "closed-loop system."
 3 CUTLER: Can I just make a comment on that real
 4 quick? These four wells here, as you probably know,
 5 produce around 8,000 gallons a minute.
 6 VECCHIO: Right.
 7 CUTLER: And they have an area of influence,
 8 when they turn these wells on, we see 10 feet of
 9 drop over here.
 10 YAMAMOTO: Sure.
 11 CUTLER: So you get the idea. To have a
 12 dualing -- to try to dual 8,000 gpm to control a
 13 plume is --
 14 BURIL: There's some technical impracticality
 15 there.
 16 YAMAMOTO: Oh, yeah.
 17 VECCHIO: The more plausible is to use this for
 18 a domestic purpose.
 19 ROBLES: Right.
 20 VECCHIO: We understand that.
 21 CUTLER: I guess our big question is can this be
 22 used as wellhead treatment.
 23 BURIL: They haven't said no to that. But what
 24 I'm hearing is that the requirements of the
 25 assessment of all of the potential sources has to be

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1 complete before we begin doing any treatment of
 2 water to be used for a domestic source.
 3 YAMAMOTO: One of the things we're going to need
 4 to know is right now, without having looked at these
 5 reports, we don't know to what degree, what
 6 chemicals you've analyzed for.
 7 VECCHIO: There may be other ones you need to
 8 look for.
 9 YAMAMOTO: And that's the concern. We don't
 10 want to like put in a treatment system now --
 11 ROBLES: And come back later, oh, we forgot.
 12 YAMAMOTO: -- and come back two years later, you
 13 forgot this compound. And the idea is the
 14 assessment is to identify all of those compounds,
 15 whatever they may be, hopefully so you don't find
 16 another perchlorate compound.
 17 BURIL: Can you explain just a little bit
 18 about -- I've heard the term "grandfathering" of
 19 this policy in dealing with certain wells that are
 20 already being treated for things. That came up at
 21 the Raymond Basin Management Board.
 22 VECCHIO: Existing treatment systems.
 23 BURIL: How does that work? What exactly is
 24 that function?
 25 YAMAMOTO: Because we already gave them a permit

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1 for that treatment system so we can't like, you
 2 know --
 3 VECCHIO: Just go back and say "Hey --"
 4 BURIL: And say "We have to take it back?"
 5 VECCHIO: Yeah.
 6 YAMAMOTO: "You lost your permit."
 7 However, what happens if something goes
 8 wrong, that well gets shut down for something else,
 9 like perchlorate. That's what happened with La
 10 Puente. Now if they want to reactivate they've got
 11 to take care of the perchlorate or go to public
 12 notification. Now we caught them in this policy.
 13 ROBLES: Does La Puente have a permit yet?
 14 YAMAMOTO: No. In fact, they haven't completed
 15 all of their demonstrations yet.
 16 BURIL: Are they going to be required to
 17 complete that same assessment?
 18 YAMAMOTO: Yeah. Yeah.
 19 VECCHIO: Absolutely.
 20 YAMAMOTO: In fact, what they have is Stetson
 21 trying to do one sort of over the whole San Gabriel
 22 Basin and then put in one especially for their site.
 23 VECCHIO: You understand we already have
 24 operable units in place. We have the Burbank
 25 operable unit. Glendale is proceeding through the

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1 process. They're doing their assessment at the
 2 moment. Then there's going to come a time for the
 3 public hearing.
 4 BURIL: Are you using "operable unit" in the
 5 same context that we use "operable unit" in the
 6 CERCLA?
 7 YAMAMOTO: Yeah. That's where the term comes
 8 from.
 9 VECCHIO: Yeah. It's the same thing.
 10 YAMAMOTO: It's a CERCLA project.
 11 VECCHIO: It's where contamination is
 12 identified, responsible parties identified. You
 13 have a consent decree, deal with ARARs. You make
 14 the determination of who's going to get this water
 15 or where it's going to go. Then you go through the
 16 permit process and this particular process with us.
 17 It gets designed, built, constructed, and then it
 18 gets operated and gets to the customers with some
 19 pretty heavy duty monitoring.
 20 CUTLER: Based on your experience, you mentioned
 21 public perception could be a show stopper.
 22 VECCHIO: Absolutely.
 23 CUTLER: Based on what you've seen --
 24 VECCHIO: Hasn't stopped Burbank. Hasn't
 25 stopped Glendale.

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1 YAMAMOTO: Well, we didn't hold a public hearing
 2 for Burbank and we haven't held one for Glendale.
 3 VECCHIO: For Glendale yet.
 4 YAMAMOTO: What I did on Burbank, it may not
 5 have been the right decision, is EPA held one, a
 6 public hearing, very early in the process, even
 7 before they even started construction. And there
 8 was -- of course, nobody objects to it. It was
 9 about four or five years ago and the thing only was
 10 built two years ago. But after the construction,
 11 then some of the people, citizens, started
 12 complaining about it.
 13 ROBLES: So you required another public hearing?
 14 YAMAMOTO: Yeah. So that probably in hindsight,
 15 because actually our -- my permit wasn't issued
 16 until they finished construction and I could have
 17 held a public hearing and who knows what might have
 18 come out of the woodwork. It probably still would
 19 have passed anyway.
 20 VECCHIO: See, the thing that Glendale learned
 21 from Burbank is the general PR. There's a lot of PR
 22 going on. There's a lot of public meetings.
 23 There's a lot of information being passed. EPA also
 24 gives out bulletins on a periodic basis. But it's a
 25 highly visible -- it's a highly visible project.

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1 And we have 5,000 gallons per minute.
 2 ROBLES: Right.
 3 BURIL: It's a lot of water.
 4 VECCHIO: It's a lot of water.
 5 ROBLES: I took this back to our legal people
 6 back in NASA headquarters. The glitch in this, and
 7 I will be quite frank with you, we do not view this
 8 as an ARAR.
 9 YAMAMOTO: Yeah. No. We actually -- our top
 10 level people have met with your top level people,
 11 and we agree. However, we have the final club if we
 12 could deny permits to anyone you deliver water to.
 13 ROBLES: Exactly. That's where your --
 14 YAMAMOTO: That's where it falls.
 15 ROBLES: The problem with the policy is that it
 16 doesn't comply with the NCP and CERCLA in one very
 17 critical thing. Public involvement in CERCLA is not
 18 the final decision. It is one of the major inputs
 19 in what is going to be decided. It is the lead
 20 agency, EPA, where in some cases they have gone and
 21 said we have taken your concern, John Q. Public, for
 22 the good of the environment and the community and
 23 public health, we have to take this. Your policy
 24 makes it that the public is the final determination.
 25 VECCHIO: If you use it for domestic water.

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1 ROBLES: Right.
 2 VECCHIO: If you used it for injection, we
 3 wouldn't get involved with it because it's strictly
 4 being injected. Then what we would have to do is
 5 deal with Pasadena on their issues.
 6 YAMAMOTO: Well, we would get involved.
 7 VECCHIO: On their issues in complying with the
 8 standards. We get involved with reviewing it and
 9 making comment for the Regional Board. But once it
 10 becomes a potable water supply for the customers,
 11 we're the bottom line.
 12 ROBLES: Right. See, but under a CERCLA, the
 13 Santa Clarita scenario would never happen.
 14 BURIL: Santa Clara.
 15 ROBLES: Santa Clara. But under this, that can
 16 happen.
 17 YAMAMOTO: Yeah.
 18 ROBLES: That's the disconnect.
 19 YAMAMOTO: Well, we're under too much political
 20 pressure.
 21 ROBLES: I understand that. That's why we've
 22 taken the course we have to. Even though it may not
 23 be ARARs, we have to consider the impact. If the
 24 water is going to be used for domestic, we have to
 25 take this into consideration because ultimately we

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1 have to work with that purveyor of water. And if
 2 they don't buy into it, the whole program is falls
 3 anyway.
 4 YAMAMOTO: Yeah. Well, part of that is the
 5 water purveyors are now getting nervous. I don't
 6 know to what degree in this area, but our office is
 7 -- constantly people are going through our records
 8 on water systems and et cetera. And some of them
 9 are attorney groups representing environmental
 10 groups or whatever.
 11 ROBLES: Special litigation cases?
 12 YAMAMOTO: Yeah.
 13 VECCHIO: Yeah. Lot of them.
 14 YAMAMOTO: And they may be, certainly, gathering
 15 that with the idea of showing up en masse -- well,
 16 not en masse, but certainly organized to oppose
 17 whatever. And so I suppose --
 18 BURIL: We talked about reinjection a little
 19 bit. Does this policy have an effect on
 20 reinjection?
 21 YAMAMOTO: No. We would review the reinjection
 22 on a case-by-case basis. And it's just to protect
 23 whatever we think the groundwater basin is going to
 24 be used for. So we certainly would not condone any,
 25 you know, reinjection of something that's above any

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1 of our MCLs or action levels.
 2 BURIL: Sure.
 3 ROBLES: But if the reinjection is clean
 4 water --
 5 YAMAMOTO: Yeah.
 6 ROBLES: -- and we inject it --
 7 VECCHIO: Right. Right. Because, you know, we
 8 review the Regional Board permits. Because you
 9 would get a Regional Board permit to do this because
 10 then they would require a cleanup level, and then
 11 where you would inject it. We normally review these
 12 and make comments to the Regional Board.
 13 BURIL: Okay.
 14 LOSI: How about biologically treated water,
 15 with regard to reinjection?
 16 YAMAMOTO: Yeah, well, it raises up some other
 17 issues. As long as it's properly handled, yeah.
 18 CUTLER: As long as it meets the criteria, as
 19 long as it's clean enough you can reinject it?
 20 YAMAMOTO: Yeah, so it's cleaned up enough so
 21 that now you just make sure there isn't some
 22 biological or byproducts that may affect the
 23 groundwater.
 24 BURIL: So appropriate disinfection would be
 25 sufficient to comply.

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1 YAMAMOTO: Yeah. Probably.
 2 BURIL: How about surface discharges?
 3 VECCHIO: That's another Regional Board thing.
 4 BURIL: You folks wouldn't have this policy
 5 trigger or be involved in that per se?
 6 YAMAMOTO: No. In fact, the Regional Board does
 7 have tighter requirements than we think are
 8 necessary. Because on some of them we don't think
 9 you need to meet drinking water standards because --
 10 VECCHIO: You have a real problem --
 11 YAMAMOTO: -- the surface stream would clean it
 12 up.
 13 VECCHIO: -- with discharging, because of the
 14 fact that you have a water rights issue. Okay. If
 15 you're injecting -- I'm sure there's probably some
 16 water rights issues involved. However, you know,
 17 you're taking and you're putting back in.
 18 BURIL: It's zero sum.
 19 VECCHIO: Right. Zero sum. Right. But if
 20 you're going to discharge it above ground, then
 21 you're going to get into some water rights issues.
 22 YAMAMOTO: Unless it's all diverted and put into
 23 the spreading basins.
 24 BURIL: That's just a thought that came from the
 25 City of Pasadena.

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1 YAMAMOTO: Sure.
 2 BURIL: We weren't sure exactly how this would
 3 actually play into that.
 4 YAMAMOTO: It's more for (UNINTELLIGIBLE). But
 5 then in the basins you already have mosquito control
 6 or vector control.
 7 VECCHIO: See, normally on the recharge you only
 8 get like a percentage of it. You only get a
 9 percentage for recharge. And then during the rainy
 10 season you only get like a 20 percent air credit.
 11 So again, it's another water rights issue.
 12 BURIL: Yeah, there's a water rights issue.
 13 VECCHIO: It's a water rights issue.
 14 YAMAMOTO: Deal with the Raymond Basin.
 15 BURIL: This was a suggestion that came from the
 16 City. I think they were thinking about their
 17 Hahamongna Park development and how that would all
 18 come together.
 19 ROBLES: To use the water that's generated for
 20 the Hahamongna.
 21 BURIL: It's not something we either accepted or
 22 put aside, because we're just not sure.
 23 VECCHIO: But, see, there's still another issue
 24 that has to be resolved and that is, yeah, you're
 25 going to put in your treatment system, yeah, you're

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1 going to put extraction wells in, yeah, you're going
 2 to stop movement of this water. However, there has
 3 been movement. Okay. So City of Pasadena still has
 4 to deal with the issue that they have 140 or 150
 5 parts of perchlorate in Arroyo Well. They can't
 6 adequately treat at the moment by blending. Okay?
 7 So there may be X number of years before there's
 8 actual cleanup. So that they have to deal with that
 9 issue at the moment. That's 8,000 gallons a minute.
 10 Okay?
 11 BURIL: Yeah.
 12 VECCHIO: They come at you pretty heavy for
 13 dollars for replacement on that. So probably the
 14 more viable issue is for domestic purposes that
 15 we've got to go through this.
 16 CUTLER: About how long do you think getting a
 17 permit would take?
 18 VECCHIO: Well, first -- okay. Can I tell you
 19 the typical length of what we've gone through on
 20 like a Glendale OU? It's been a three and a half
 21 year process.
 22 ROBLES: Mark, did you say something? Did you
 23 cough? Did you choke?
 24 RIPPERDA: I gasped. Yeah.
 25 VECCHIO: Let me explain to you why it's been a

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1 three and a half year process. It's because of the
 2 RPs. Okay? It's the identification, the
 3 contribution, what their percentage is in terms of
 4 money for cleanup. There was Dreamworks that came
 5 in and messed the whole thing up because they wanted
 6 the site that Glendale -- that they were going to
 7 put the treatment facility.
 8 RIPPERDA: So that may not actually be a good
 9 example because we don't have --
 10 VECCHIO: Well, that's all I could give you,
 11 guy.
 12 ROBLES: So it only takes us one and a half
 13 years.
 14 RIPPERDA: Do you have a permit application
 15 package that you expect to see like more than what's
 16 in this policy?
 17 VECCHIO: Okay.
 18 RIPPERDA: How does JPL go about applying for a
 19 permit if they wanted to?
 20 VECCHIO: JPL would never apply for a permit.
 21 YAMAMOTO: They can.
 22 VECCHIO: Unless you want to become a water
 23 purveyor.
 24 BURIL: No, ma'am.
 25 ROBLES: We cannot.

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1 YAMAMOTO: If they treat the water, then it's a
 2 question of who's treating the water.
 3 RIPPERDA: Right. If JPL is doing source
 4 control on site so they drill their own well, they
 5 do their own treatment and then they give the water
 6 to Pasadena or sell it to Pasadena, would Pasadena
 7 then apply for the permit?
 8 YAMAMOTO: Yeah, in addition to JPL.
 9 BURIL: If we were to supply Pasadena the
 10 capacity for treatment through some agreement with
 11 them, but they would operate it and support --
 12 VECCHIO: If they operate it, then they would
 13 get the permit.
 14 YAMAMOTO: Yeah.
 15 VECCHIO: It becomes an --
 16 YAMAMOTO: See, I need control over the people
 17 who are operating the plant.
 18 ROBLES: See, in most cases we would -- like,
 19 for example, with the Calgon system, we pay for it,
 20 but basically Pasadena says, "Okay. This is how we
 21 want it done." And so they control the way to
 22 operate it. We're just paying for it.
 23 YAMAMOTO: See, in the case of Glendale, the
 24 City was not a responsible party so they weren't,
 25 supposedly, involved in the treatment whatever, and

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1 it was the respondent's group. But they didn't want
 2 a permit themselves. So what finally had to be
 3 negotiated is for Glendale to assume -- Glendale
 4 literally was kicking and screaming into the process
 5 because they initially did not want to have anything
 6 to do with operating. But we told them that's the
 7 only way we're going to accept it. You know,
 8 somebody had to give, either Glendale operate it or
 9 the responsible parties get a permit.
 10 ROBLES: See, for us, I would prefer that, not
 11 for ulterior motives. It's easier to have public
 12 meetings with Pasadena Power & Light being the one
 13 saying "We're getting the permit."
 14 YAMAMOTO: Right. They're going to operate it.
 15 ROBLES: "And we've got NASA and they're going
 16 to do this and we're going to make them make sure,"
 17 and so on and so on. And we stand up there trying
 18 to get a permit saying "I don't buy water from
 19 NASA."
 20 YAMAMOTO: My understanding is the Glendale
 21 responsible parties are the ones that are designing
 22 the system. Right?
 23 VECCHIO: Yeah. They're paying for all the
 24 costs.
 25 YAMAMOTO: Costs of the design and everything.

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1 VECCHIO: Just like you will pay for the costs
 2 of the design. You will pay for the installation
 3 and the operations --
 4 YAMAMOTO: There is also costs to Glendale for
 5 operating the system, too.
 6 VECCHIO: -- of the system.
 7 ROBLES: See, basically Pasadena says "We don't
 8 want you to build it. We want you to lease it." So
 9 we had to do what they told us to do. That's what
 10 the Calgon system --
 11 BURIL: They basically wanted a zero cost to
 12 them.
 13 ROBLES: So we lease it. We pay the
 14 maintenance. They basically are in charge of it.
 15 YAMAMOTO: That's fine.
 16 VECCHIO: That's fine. We don't have an issue
 17 with that.
 18 BURIL: Okay. With regard to the CEQA
 19 requirement that's in this, how do you folks
 20 coordinate that with CERCLA efforts, given CERCLA
 21 efforts are exempt from NEPA/CEQA and the policy?
 22 ROBLES: Because they meet NEPA/CEQA
 23 requirements. There's been court cases.
 24 YAMAMOTO: It's just whatever it takes for us to
 25 issue the permit to Pasadena, because Pasadena is

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1 getting this water, or whatever.
 2 BURIL: So --
 3 YAMAMOTO: In order for us to issue a permit we
 4 have to comply with CEQA.
 5 BURIL: So if Pasadena is going to get the
 6 permit, they've got to comply with CEQA irrespective
 7 of the CERCLA effort that's impacted by this.
 8 YAMAMOTO: Right. Yeah. And it could be very
 9 simple or whatever, depending on what's involved.
 10 ROBLES: Because our view is that when they get
 11 a permit they'll have an attachment which is our
 12 administrative record.
 13 YAMAMOTO: Right. Okay.
 14 BURIL: You don't want to go there.
 15 ROBLES: A small document like this with a huge
 16 room coming right behind it.
 17 YAMAMOTO: It's all right. We've got I don't
 18 know how many bookcases of stuff from Burbank
 19 operable unit.
 20 VECCHIO: And we've got shelves and shelves for
 21 Glendale operable unit.
 22 BURIL: So as far as the public input to this,
 23 then, is there any issue with coordination of CERCLA
 24 and CEQA-required public hearings or your policy
 25 public hearing?

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1 YAMAMOTO: No.
 2 BURIL: We can do all of these together if we
 3 went that way?
 4 YAMAMOTO: If you went that way. But I don't
 5 know. Because I presume that the CERCLA hearings
 6 are way up, way earlier than we are.
 7 VECCHIO: Right.
 8 ROBLES: It's a lot easier to distinguish from
 9 the fact that Pasadena was getting a permit to say
 10 this is a public meeting for us to get a permit so
 11 that we can get the water (UNINTELLIGIBLE) --
 12 YAMAMOTO: Right. That's what it would be. Not
 13 this project.
 14 ROBLES: Never mix the apples and oranges
 15 together. You don't get fruit. You get mush.
 16 VECCHIO: That's about right.
 17 BURIL: Let me try to play this scenario out for
 18 you in my own head here and see if it would hold any
 19 water, so to speak.
 20 What I'm thinking right now is that if we
 21 went forward with a feasibility study and said that
 22 we wanted to have, let's say, the Arroyo Well pump
 23 water, contain the plume, we're going to treat it,
 24 we're going to give it to the purveyor, who would
 25 ultimately -- basically, not we, but they would be

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1 running the plant.
 2 YAMAMOTO: Right.
 3 BURIL: And we would be financing that. We
 4 would need to get your permit to do that, which
 5 would require all the assessments that are
 6 outstanding be completed prior to that permit.
 7 Then we would also be in the position at
 8 that point of going to the public with this plan
 9 prior to the permit being issued, in which case we
 10 would have opportunity to have the public say, "No,
 11 we don't want that to happen" and we're back to
 12 ground zero as far as what we were going to do on a
 13 feasibility study.
 14 Is that a fair characterization of where
 15 we're at right now?
 16 ROBLES: Worst-case scenario would be, Chuck,
 17 that we would shut down the Superfund program and
 18 just say we're going to buy water.
 19 BURIL: Well, yeah, there is that opportunity.
 20 I just want to be sure that that was the kind of
 21 scenario that we were dealing with because it draws
 22 into question a number of things that we were
 23 thinking of doing, and certainly the approach that
 24 we had been taking up until now is going to have to
 25 be a little bit different, at the very best.

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1 CUTLER: What it sounds like can happen, though,
 2 is almost that whole scenario, except for the very
 3 end, instead of that water going to a drinking water
 4 source it just gets reinjected.
 5 BURIL: Yeah, you can reinject. Of course, then
 6 there are questions that go with that in dealing
 7 with the Raymond Basin Management Board and whether
 8 they would accept that as a remedial action under
 9 CERCLA.
 10 ROBLES: Because their ultimate goal is to get
 11 the wells back in production.
 12 CUTLER: It may be forced to do something like
 13 that until -- if it's three years before you can get
 14 a permit.
 15 ROBLES: But I cannot --
 16 VECCHIO: I just say that's our experience to
 17 date. That doesn't mean that that -- there's other
 18 operable units going at a fairly vigorous pace. And
 19 that's -- they thought they were going at a fairly
 20 vigorous pace, and that was the MTBE issues at the
 21 Shawna and Arcadia sites out in Santa Monica,
 22 because they're going essentially through the same
 23 process. The companies, the oil companies agree
 24 that they have caused the contamination, they are
 25 going to clean it up. You know, there's the whole

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1 process that they're going to go -- that they're
 2 going through there, and they're also going through
 3 this assessment.
 4 They thought that they would probably be
 5 on line with some treatment system by this time, and
 6 that's -- this is like a year later. So -- but
 7 that's another issue.
 8 So it all depends. There's a lot of
 9 extenuating factors and I'm just telling you what
 10 our baseline has been to date.
 11 BURIL: Okay. That's fair.
 12 VECCHIO: Okay? So it's anywhere from a year to
 13 three.
 14 BURIL: Or more, depending.
 15 VECCHIO: Depending, yeah.
 16 RIPPERDA: Can I say a couple things about like
 17 the feasibility study?
 18 BURIL: Sure.
 19 RIPPERDA: You had said a few minutes ago that
 20 you pick a preferred alternative and if you don't
 21 get the permit, you throw it out.
 22 That's not probably quite true. Just from
 23 EPA's perspective, when you do the feasibility
 24 study, you list your preferred alternatives and, you
 25 know, probably the first one would be treating the

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1 City of Pasadena wells and using it for municipal
 2 water and then you would have other alternatives,
 3 including something where you're treating on site
 4 and reinjecting on site with no municipal use at
 5 all.
 6 So if you go with the number one
 7 alternative and you would have to apply for the
 8 permit before you ever sign a ROD because you
 9 wouldn't want to sign a ROD if you're not going to
 10 end up with a permit. So you would just have to put
 11 the ROD on hold until the permit determination is
 12 made by DHS. And if they decline the permit, then
 13 you would go to the second alternative without
 14 redoing the FS. You can just go to it and that's
 15 how the ROD would be signed.
 16 But if the second alternative was
 17 ridiculously expensive compared to the first, at
 18 that point EPA might say, well, your first
 19 alternative is valid, it's protective of human
 20 health and the environment, you know, it meets all
 21 the requirements, the second alternative is
 22 ridiculously expensive, at that point we might say,
 23 well, we're not going to make you do the second one.
 24 You know, if local politics or something is keeping
 25 you from doing the common sense approach, you know,

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1 we're not going to make you do something that's
 2 ridiculous. If it's only a little more expensive,
 3 than, yeah, we would make you do it.
 4 BURIL: Okay.
 5 ROBLES: Therefore, Mark, you're saying that the
 6 scenario would be if we couldn't get a permit or if
 7 the purveyor of water that we were trying to work
 8 with couldn't get a permit, then basically the
 9 project is dead.
 10 BURIL: Well, no, you have a prioritization.
 11 YAMAMOTO: Or you may try some other purveyors
 12 than your Raymond Basin to give the water to.
 13 BURIL: Let me ask a question, Mark. This
 14 sounds like in the feasibility study that there is
 15 either an outward or tacitly presumed priority of
 16 alternatives in terms of --
 17 RIPPERDA: Right. Given the uncertainties, you
 18 would have to like in your feasibility study present
 19 it as, you know, preferred alternative number 1,
 20 then 2, then 3. You know, rank them with a little
 21 bit of, you know, "if then" type of selection
 22 criteria for moving on to the ROD.
 23 BURIL: I guess this is kind of an interesting
 24 segue to one of the next points on my agenda. I'm
 25 not sure what other questions people have with

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1 regard to DTSC -- or excuse me, DHS' policy. Most
 2 of the answers I needed I think I got.
 3 Mark, Mark, Vitthal, you guys --
 4 LOSI: I got one question. You said that if
 5 we -- if JPL were to implement, say, a perchlorate
 6 treatment on the Pasadena wells that they will have
 7 to go through this process, which could take X
 8 number of years. Okay.
 9 My question is if JPL were to do something
 10 aside from the purveyors, as Peter was suggesting,
 11 and reinject the water rather than provide it to
 12 the, say, City of Pasadena, for example, is the City
 13 of Pasadena then subject to this memo, or can they
 14 proceed as they've been?
 15 VECCHIO: No. They're not subject to this memo.
 16 But the problem is that they still have wells that
 17 have perchlorates.
 18 LOSI: Right. But they're currently producing.
 19 VECCHIO: No, they're not. They've got a well
 20 out of service.
 21 YAMAMOTO: If they were to reactivate the Arroyo
 22 Well, they'd have a problem now.
 23 LOSI: What if they were not to? I'm just
 24 asking the question.
 25 HOSANGADI: What if we were to have a well in

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1 close proximity to the Arroyo Well?
 2 LOSI: Or use the Arroyo?
 3 HOSANGADI: Or use the Arroyo well?
 4 YAMAMOTO: If they use the Arroyo Well, then
 5 they're subject to this policy.
 6 HOSANGADI: But not use the water for drinking.
 7 BURIL: In other words, we would take the
 8 discharge from the Arroyo Well and reinject it.
 9 YAMAMOTO: Then you have to --
 10 VECCHIO: You'd have to work out a deal with
 11 Pasadena.
 12 BURIL: But it would not have a permit impact,
 13 per se, with you guys?
 14 VECCHIO: Yes. As long as you don't use it for
 15 domestic water.
 16 LOSI: Just to finish. There would be no issue
 17 with the permitting involved to produce as they are
 18 now, current production.
 19 YAMAMOTO: Yeah.
 20 BURIL: With the remaining wells.
 21 YAMAMOTO: Yeah.
 22 LOSI: Thank you.
 23 VECCHIO: 52 is up to like 40 right now. Right?
 24 BURIL: Right.
 25 VECCHIO: I think there's stuff in Ventura and I

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1 think there's stuff in Windsor. Those all blend
 2 together. So I don't know if they're going to be
 3 able to blend.
 4 BURIL: I hadn't heard of Windsor going up. I
 5 heard Ventura began to have some.
 6 CUTLER: Our thought is the reason that's
 7 happening is because the Arroyo Well is off.
 8 VECCHIO: It's off and it's migrating.
 9 CUTLER: And once that gets back on --
 10 VECCHIO: You think it's going to pull it back
 11 up again?
 12 CUTLER: It will protect those wells. Kind of
 13 look at our plume maps. That plume is kind of like
 14 shifting south. It's following the production,
 15 obviously. So obviously, I'm sure these guys feel
 16 the same, we certainly don't want Well 52 to go off
 17 because then it's in the same boat as the Arroyo
 18 Well --
 19 VECCHIO: Right.
 20 CUTLER: -- and the City won't be happy.
 21 ROBLES: So when the Arroyo Well was on, the
 22 other wells were okay?
 23 BURIL: For the most part, yes. It wasn't until
 24 the Arroyo went down and things started shifting
 25 south.

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1 CUTLER: If we were to put an extraction well
 2 for cleanup, the Arroyo Well is a perfect spot.
 3 Either that or the Arroyo Well pulled the plume
 4 right to it, is probably what happened.
 5 So it couldn't be any better to use that
 6 well either for treatment or -- for water or for
 7 treatment and reinjection because it's perfectly
 8 placed. The plumes are probably going right to
 9 those screened intervals. You put in another well,
 10 you'd probably try to mimic those screened intervals
 11 because it's kind of scattered. It's ideal. And we
 12 think it will protect the plume from migrating
 13 south. You can crank that up 1,000, 2000 gpm like
 14 it was doing before.
 15 BURIL: It would help. That's the thought
 16 process behind it.
 17 CUTLER: Right. There again, speed is a plus
 18 because if Well 52 goes down --
 19 YAMAMOTO: Then it goes further, you may not be
 20 able to pull it back up.
 21 CUTLER: It may be one to three years before you
 22 get it back on.
 23 VECCHIO: Yeah. I can see where this would be
 24 leading and the City of Pasadena would come in and
 25 say, "Okay, you give me another well now. You're

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1 going to have to pay me for the loss of my water
 2 rights and pumping rights on that."
 3 Trust me, there's going to be some heavy
 4 negotiating.
 5 BURIL: We're anticipating that already.
 6 VECCHIO: Yeah.
 7 BURIL: Okay. Any other questions on the policy
 8 part of this?
 9 CHRISTMANN: I had a couple of thoughts, Chuck.
 10 BURIL: Yeah, Craig.
 11 CHRISTMANN: On your potential use of those
 12 production wells, you're not sure of the
 13 distribution of contaminants in those wells. I
 14 would suggest that you examine the feasibility of
 15 packer testing those wells and looking at exactly
 16 what's being produced from the various screens so
 17 you can optimize your extraction there.
 18 BURIL: We've actually talked to Pasadena in
 19 kind of cursory terms about doing just that.
 20 CHRISTMANN: The other item is that we are
 21 working with EPA and looking at those upgradient
 22 sources for the PCE.
 23 BURIL: That's good news.
 24 CHRISTMANN: That's probably next fiscal year
 25 that that's going to happen. But we're trying to

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1 pursue that.
 2 BURIL: Good.
 3 CHRISTMANN: I think we've gotten a little money
 4 from EPA to spend money on that.
 5 BURIL: Great. Well, job security. Right?
 6 Okay. Having exhausted the questions at
 7 least for the time being on the policy, then, I'd
 8 like you folks to stick around, if you could,
 9 because what I'd like to talk about next is with
 10 regard to how we might want to phase our FS efforts
 11 here. Having your comments as far as how things
 12 have worked at other locations and things might be
 13 of some benefit.
 14 In trying to figure out how we were going
 15 to deal with the policy and then how we were going
 16 to deal with providing the deliverables in the
 17 CERCLA effort, we came to a conclusion that we
 18 probably are not going to be able to get all the
 19 answers all at once. And I think that's become
 20 painfully obvious as of our meeting today, that
 21 there are portions of this which could be somewhat
 22 protracted in terms of getting things together.
 23 And so what I was going to propose to our
 24 RPMs was that we phase this type of approach on the
 25 FS to deal first with getting through you folks,

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1 okay, the regulators, find out what it is that we
 2 have to deal with in terms of the ARARs, get
 3 everything resolved in terms of working with you
 4 folks as the regulatory agencies.
 5 The second phase, then, would be to take
 6 those particular alternatives, ones that we have
 7 already worked with you and understand what the
 8 requirements would be, and then go to, say, other
 9 entities that we would be involved with in order to
 10 establish that particular remediation. Case in
 11 point, go then to Pasadena and say, "Okay, folks, we
 12 have worked this through and we have our list of
 13 prioritized alternatives. The one that came to the
 14 top is with you folks. And we need to work with
 15 you. We've already worked the issues with the
 16 agencies, so we understand what their requirements
 17 would be. We would now like to sit with you and
 18 understand, one, if it's even feasible at all from
 19 your perspective, and then what your requirements
 20 would be in addition to the regulatory agencies'."
 21 Once we have that understood and if,
 22 indeed, we end up dropping certain alternatives out
 23 as a result, fine. We don't know. We would have to
 24 cross that bridge when we get to it.
 25 But whatever survives that second phase

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1 would then go to the last phase, which would be
 2 whatever requirements we have in terms of proposed
 3 plan, public meetings and so forth to finish off the
 4 CERCLA aspect of things. And then if the DHS policy
 5 requires additional stuff in order to obtain the
 6 permit, we would try to build those into our overall
 7 approach and schedule as much as we could, but
 8 recognizing that we would be pursuing these things
 9 concurrently, and thereby hoping to keep the time
 10 frame down.
 11 But it seems to me at this particular
 12 point that we don't have the ability to have all of
 13 the answers to make the best selection in all cases
 14 right now. We just don't know what the City of
 15 Pasadena is going to say to the alternatives. We
 16 don't know what kind of impacts Gary's organization
 17 may have on some of the alternatives. And taking
 18 this in a more stepwise progression I think is the
 19 best way we can go.
 20 So my suggestion at this point is to
 21 simply say that the first FS, and I say first FS
 22 that you folks get, would be one that we would
 23 recognize has been worked within JPL/NASA and the
 24 regulatory agencies but does not take into account
 25 working with the bodies that would ultimately play

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1 with us, say, Pasadena or Raymond Basin or others,
 2 but that we would then go forward once we've
 3 resolved our own issues internally, then move to
 4 those folks, issue whatever reports, addenda or
 5 whatever would be necessary in order to document the
 6 decisions of that process, and then finally into the
 7 proposed plan, public hearing, and so forth from
 8 there.
 9 ROBLES: That's a good idea.
 10 BURIL: How does that sound in concept to people
 11 at this particular point?
 12 YAMAMOTO: Is there a reason why you don't want
 13 to maybe call in Pasadena and Raymond Basin
 14 sooner?
 15 VECCHIO: First?
 16 YAMAMOTO: Sooner?
 17 ROBLES: Because they cloud the issue from the
 18 standpoint of we want to know what the regulatory
 19 agencies want first. Then we take that to them and
 20 say --
 21 YAMAMOTO: Or maybe not discuss the whole issue,
 22 but at least discuss the issue of the acceptability
 23 of whether they would even take the water.
 24 VECCHIO: Take the water.
 25 YAMAMOTO: Because why spend all that time going

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1 down that path if they're going to say no.
 2 BURIL: That's a reasonable thought.
 3 YAMAMOTO: Maybe just deal with that particular
 4 issue, not all of the issues.
 5 VECCHIO: And the only way that I can actually
 6 deal with any of these projects is that we have a
 7 billable program. And in order for me to bill and
 8 even work on any of these projects, I have to have a
 9 water agency to attach it to. So we can set up a
 10 deal where City of Pasadena gets billed for this and
 11 you can pay Pasadena for this. But I need to have a
 12 water system that you're going to associate with up
 13 front.
 14 CUTLER: I think, too, what Chuck is getting at
 15 is of those nine criteria that EPA sets out for FS,
 16 one of the last ones is community acceptance.
 17 That's something we probably won't know until way
 18 down the road. Either we go through a permit
 19 process or the public meeting process for CERCLA.
 20 And so we may have to build in the -- make the
 21 assumptions, well, maybe the community will accept
 22 it, wellhead treatment for drinking water, or they
 23 won't accept it, maybe we'll have to reinject. So I
 24 think what you're getting at, Chuck, is we may have
 25 to carry those things through not knowing the answer

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1 from the public. Then they come down at the last
 2 second and say "I'm not drinking that."
 3 YAMAMOTO: I'm not talking about the public. I
 4 just mean whether the water system will even accept
 5 it.
 6 BURIL: Even consider it.
 7 YAMAMOTO: They won't even bother. They may say
 8 no. The community may say yes and the water
 9 department says no.
 10 BURIL: That's why I was breaking it down in the
 11 phases that I've mentioned. Your point is well made
 12 as far as what we might want to do at least in
 13 understanding whether they even want to talk to us
 14 about that.
 15 I'll share with you that the Raymond Basin
 16 and City of Pasadena both already made overtures to
 17 us that, yeah, they would be very interested in
 18 making those kinds of agreements.
 19 YAMAMOTO: Okay.
 20 BURIL: So from that perspective, I think that
 21 we probably are a little further along than what you
 22 are already aware of. But we have not gone into
 23 detail as to what their anticipated requirements
 24 would be and their demands would be if we were to
 25 try to formalize this. That's the aspect that I'm

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1 saying that we would not broach --
 2 YAMAMOTO: Right
 3 BURIL: -- until after we had worked the
 4 internal issues with all the regulatory agencies.
 5 YAMAMOTO: See, I would want to, from our
 6 standpoint, make sure Pasadena has a clear
 7 understanding about the permit issue with them and
 8 that they're expected to be totally responsible.
 9 BURIL: That would be the thing that I would say
 10 that we would go to them and say, "Okay, folks, this
 11 is what we want to do, but understand what Gary's
 12 organization is telling you, is that it's going to
 13 take this, this, this, and this, and what are you
 14 going to expect from us if we enter into this
 15 approach?" That's the thing. I want to understand
 16 all the agency requirements and then work with the
 17 other folks so that they understand them, too, and
 18 then we can come to agreement to either do or not
 19 do.
 20 Does that sound like a feasible approach
 21 based on what you've heard so far?
 22 YAMAMOTO: Yeah.
 23 GEBERT: Yeah. Does to me.
 24 BURIL: Okay. Well, I'm going to proceed in
 25 that fashion, then, because -- boy, this just got

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1 really complicated. It was complicated to begin
 2 with, but it's even more complicated now. That's
 3 not meant to be pejorative toward you folks. It's
 4 something we've got to deal with. It will be
 5 interesting to see how it works.
 6 RIPPERDA: So, Chuck, what's the schedule for
 7 the FS?
 8 LOSI: Three and a half years.
 9 BURIL: Well, okay, Mark. You ask a wonderful
 10 question, one which I'm not sure I can answer well
 11 right now. But let me --
 12 ROBLES: Or want to answer.
 13 BURIL: Or even want to. But let me tell you
 14 that at the last telecon that we had, I did indicate
 15 that we were going to be putting a proposal together
 16 to extend the FS schedule to deal with treatability
 17 studies that we wanted to do to try and find a more
 18 viable alternative for treatment of perchlorate.
 19 RIPPERDA: Yeah.
 20 BURIL: That schedule extension is basically
 21 four months to get all the treatability tests done,
 22 get it into the FS and build it into the overall
 23 evaluation of the things that we want to do. The
 24 proposal is sitting on my desk. Pete gave me the
 25 thumbs up last Friday to move forward on it. So we

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1 are planning to do so and I hoped to have a letter
 2 for you here today, but unfortunately my computer
 3 died on me and I don't have the letter.
 4 But we're looking at right now a
 5 four-month extension from what it's currently
 6 scheduled at. And that would get us to the point of
 7 having all of the what we consider feasible
 8 alternatives established that we would then turn to
 9 you folks with.
 10 Now, Mark, one thing I want to check with
 11 you on. Are we talking about wanting in the FS a
 12 prioritized list of alternatives based on what we're
 13 hearing here today?
 14 RIPPERDA: That's what an FS usually does, or
 15 almost always does.
 16 BURIL: Because I've had some discussions with
 17 my consultants that were somewhat contrary to that.
 18 That's why I wanted to find out.
 19 ROBLES: Consultants are contrary anyway.
 20 RIPPERDA: But I would want to keep the FS
 21 somewhat simple because there are so many long-term
 22 variables. I agree with, I think, what you said a
 23 few minutes ago, where the FS should state that some
 24 of these alternatives have some things to work on.
 25 But I wouldn't worry about them in the first draft.

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1 The first draft of the FS I just want to see the
 2 technical feasibility and the cost data.
 3 BURIL: Right. And that's what we're trying to
 4 generate. We have a lot of it for everything that
 5 we've done so far. We've got these bio-treatability
 6 studies that we want to do with -- well, you'll see
 7 this. Basically it's dealing with RO and
 8 bio-treatability that looks to be far more effective
 9 in terms of cost than anything we've seen to date.
 10 And that's a big player in this because when we
 11 start talking about the other alternatives, the
 12 costs jump rather dramatically. We're in the 25- to
 13 \$30 million range otherwise, and we're hoping to cut
 14 that back rather significantly.
 15 ROBLES: Yes.
 16 VECCHIO: That ISEP one is 25 to 30?
 17 ROBLES: Catalytic system.
 18 BURIL: With everything together, yeah.
 19 VECCHIO: With the --
 20 BURIL: With the catalyst system.
 21 ROBLES: It can eat up the whole environmental
 22 NASA budget in one gulp here.
 23 BURIL: That's why we're struggling with this.
 24 We had hoped that the Calgon folks would come in
 25 with a more reasonable cost estimate. They have

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1 actually done a fabulous job for me in trying to
 2 whittle that cost down. They're examining other
 3 potentials for bringing the overall cost down,
 4 including things like lease agreements and things of
 5 that nature.
 6 But this is a brand new area for them,
 7 too. They've never done this with this kind of
 8 system.
 9 VECCHIO: 500 gallons a minute?
 10 BURIL: No, no. This is 4,000 gallons a minute.
 11 VECCHIO: 4,000 gallons a minute.
 12 BURIL: A \$10 million capital cost and about a
 13 million and a half a year to run it.
 14 ROBLES: You want a Mercedes with or without the
 15 engine?
 16 VECCHIO: Usually with.
 17 BURIL: So we're in a position of seeing that as
 18 the alternative right now. And some of the other
 19 alternatives that we have information on are nearly
 20 as costly. And so we're desperately looking for
 21 something that is more in line with what NASA would
 22 like to be able to spend and is also acceptable to
 23 the regulatory agencies. This treatability portion
 24 of it appears to be the silver lining. We just
 25 don't know how silver it is until we actually do the

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1 tests. And like I say, I'll be getting that out to
 2 you tomorrow.
 3 So my current thought is that we would be,
 4 for the first go-round of the technical evaluation
 5 and ranking of the alternatives, we would be about
 6 four months beyond what's currently on the schedule.
 7 Then subsequent to that, we would have to
 8 build into the other phases of the FS, we'd have to
 9 build those into the schedule because currently
 10 those are not in there. And that would change
 11 things as well. We would have to sit and talk about
 12 exactly how that happens. I've only conceptualized
 13 the steps. I haven't conceptualized how long the
 14 steps would take at this point.
 15 ROBLES: Does that answer your question, Mark?
 16 BURIL: Does that help answer it?
 17 RIPPERDA: Yeah.
 18 BURIL: All right. Well, I will proceed, then,
 19 on the FS phasing as I've described, and I will get
 20 that memo out to you folks with the proposal. Once
 21 we can take that step, assuming that there's no
 22 problem with that, and I'm not making any
 23 assumptions here because I've heard no agreements
 24 from you folks as far as extending the schedule, but
 25 making that assumption that that ultimately is

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1 approved, I think that we would then all want to sit
2 down and just understand what the steps are for the
3 next phase and get some understanding of what we
4 have to do in order to get that together and make it
5 happen.
6 Like I said, I have not gone that far in
7 my conceptualization of this so I can't really give
8 you any idea at this particular point.
9 Okay. The last thing I have on my agenda
10 here is with regard to TEG. TEG is the company who
11 does our soil vapor analyses.
12 One of the things that has come up with
13 regard to TEG has been an investigation that has
14 been undertaken by the NASA Inspector General. It
15 centers around an allegation that the company had
16 falsified some results that they had provided to a
17 government agency. Without wanting to go any
18 further into it because of the investigation, it
19 brought considerable concern to me with regard to
20 what it is they've provided us.
21 Based on all the work that we've done so
22 far with our own data validation efforts and
23 verification efforts, we don't believe we have a
24 problem with the data. And, in fact, the individual
25 who was involved with the alleged fraud, I guess is

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1 what you could call it, did not participate in the
2 development of our data whatsoever. Everything
3 looks fine from our perspective, but what we would
4 like to go ahead and do is to have a separate soil
5 gas firm come out and simultaneously sample with the
6 subsequent company of TEG. Currently we use a
7 company called HP. What is it? HP what?
8 B.G., do you remember?
9 RANDOLPH: It's Hartman Perkin.
10 BURIL: They're the folks who basically took
11 what TEG started and kept going. TEG is a company
12 that no longer exists.
13 But we would like to go ahead and have a
14 separate company come out and just split sample.
15 RANDOLPH: TEG is still a division of HP and
16 they go under their own logo.
17 BURIL: Oh, really?
18 RANDOLPH: That's what I explained before. But
19 all the invoices all go to HP.
20 BURIL: But anyway, this is in an effort to be
21 sure that the data that we are getting is good and
22 that we would hopefully resolve any concerns that
23 might come up as a result of having used TEG
24 previously. I wanted to pass that along to you,
25 open it up for any comment that anyone might have

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1 with that in mind and see what you think of that
2 idea.
3 CHRISTMANN: How much were you going to have
4 them, this other company --
5 BURIL: 100 percent duplication. Every sample
6 TEG does we're going to do with the other company.
7 GEBERT: What's the name of the other company?
8 BURIL: Don't know yet.
9 RANDOLPH: There are several out there. But one
10 clarification. They didn't falsify results. It was
11 a calibration. And it was not for a government
12 agency.
13 BURIL: Thank you, B.G. I misspoke. Thank you
14 for that correction.
15 GEBERT: That also happened three or four years
16 ago. It's an old incident.
17 BURIL: It's been a while. The need for the
18 investigation is something that I have no knowledge
19 of. And I don't want to speak any more about it
20 except to say that this is going on and you folks
21 should be aware of it and we're taking this
22 particular action to help allay any concerns that
23 might be brought up as a result of TEG's involvement
24 in the past.
25 ROBLES: What do you guys think? Good idea?

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1 GEBERT: Good idea.
2 CHRISTMANN: It answers any questions you may
3 have. I think 100 percent is an awful lot, but --
4 ROBLES: Because this business is about data.
5 BURIL: You know what, at this point I would
6 rather have absolutely no question by doing that
7 than to leave any doubt.
8 CHRISTMANN: Yeah.
9 BURIL: I appreciate your thought, though.
10 That's everything I have on my docket.
11 Oh, excuse me. You know what, I have DTSC
12 comments on OU-2 that I've skipped for some reason.
13 Unfortunately I did not bring those with
14 me. B.G., have you got those with you?
15 RANDOLPH: I have a copy.
16 BURIL: Was there anything that you wanted to
17 bring up on this? You're the one who is writing it.
18 So why don't you ask the questions that you want to
19 ask and see whether --
20 RANDOLPH: Does anybody else have a copy?
21 GEBERT: I forgot to bring mine.
22 BURIL: I did not bring mine, I'm sorry to say.
23 I tell you what. What time is it, B.G.?
24 RANDOLPH: It's about eight minutes to 3:00.
25 BURIL: If we take a ten-minute break maybe we

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1 can generate some copies, come back and just talk
 2 about this.
 3 Gary and Vera, if you folks want to hang
 4 around, you're more than welcome. Otherwise, we'll
 5 probably turn you loose before the traffic gets bad.
 6 VECCHIO: What's OU-2?
 7 BURIL: OU-2 is the on-site sources. OU-2 is
 8 basically everything that's vadose zone here on the
 9 site. So it does not directly involve groundwater.
 10 Of course, it does have some influence on it
 11 ultimately.
 12 YAMAMOTO: Right.
 13 BURIL: This is just basically the
 14 characterization of what we think were the sources
 15 of contamination that ultimately ended up in the
 16 groundwater.
 17 VECCHIO: You know what I'm going to need,
 18 Chuck, because I'll be the person working on this
 19 OU, is actually the name of who the EPA contact is,
 20 phone number, Regional Board, Department of Toxics,
 21 all of the people involved, and then the people in
 22 your agency.
 23 BURIL: Okay.
 24 VECCHIO: So that I have those at hand.
 25 BURIL: Not a problem. I have a list that I can

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1 e-mail to you right away. Do you have an e-mail
 2 address, by chance?
 3 VECCHIO: Yeah. Yeah.
 4 BURIL: If I could get that from you.
 5 We're going to take a ten-minute break and
 6 then we'll reconvene on the DTSC things.
 7 Vera, Gary, thank you very much. It was
 8 very helpful.
 9 YAMAMOTO: Thank you. Glad to be of some
 10 assistance.
 11 (A recess was taken from
 12 2:55 P.M. until 3:11 p.m.)
 13 (Mr. Robles, Mr. Yamamoto, Ms. Vecchio,
 14 Ms. Mahoney and Mr. Jackson departed.)
 15 (Mr. Ripperda disconnected.)
 16 BURIL: We're back.
 17 B.G., which ones did you want to
 18 specifically talk to? We can go through each one of
 19 them, but some of these look like they're
 20 relatively --
 21 GEBERT: Unless you have a specific concern
 22 about them, there's no reason to do that.
 23 BURIL: Which ones are you looking at?
 24 RANDOLPH: Looking under General Comments,
 25 number 3.

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1 GEBERT: Significant water vapor?
 2 RANDOLPH: Right.
 3 BURIL: What are we trying to get to there?
 4 RANDOLPH: How can we tell what soil vapor is,
 5 or the vapor moisture or water vapor?
 6 CHRISTMANN: We were looking more at did you
 7 have any records of moisture in the probes, probes
 8 inundated.
 9 RANDOLPH: We have some that were plugged, we
 10 know that, with water, where we could blow but
 11 couldn't purge with a syringe.
 12 CHRISTMANN: I think that's the kind of
 13 information Joe was looking for.
 14 RANDOLPH: Because "significant water vapor," I
 15 have no idea what that meant other than that. But
 16 we had no signs of any vapor condensation in the
 17 syringes.
 18 CHRISTMANN: That's the only -- if you didn't
 19 have any records of that, then --
 20 RANDOLPH: We didn't have it. I did all the
 21 sampling.
 22 CHRISTMANN: Right.
 23 RANDOLPH: That was observation.
 24 BURIL: So all we have to do, then, is just make
 25 a note in the text that says "During sampling there

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1 was no noted soil moisture condensing in the syringe
 2 or in the lines, and therefore should not be an
 3 issue."
 4 CHRISTMANN: Right.
 5 HWONG: Yeah.
 6 BURIL: Okay. Great.
 7 RANDOLPH: Okay.
 8 BURIL: What else you got?
 9 RANDOLPH: Let's see. Down at the bottom of
 10 that first page, Contaminant Source Investigation,
 11 number 2. What is meant by "co-located analytical
 12 results for soil versus soil vapor"?
 13 HWONG: What I mean right here is you got the
 14 vapor sample and if you have -- also have sent that,
 15 the soil sample, you can just go ahead, you know,
 16 correlate it and let me know what's the comparison
 17 between the result.
 18 BURIL: That may be born of no previous
 19 knowledge of the project. Because when we first
 20 started the soil vapor aspect, we agreed with the
 21 Regional Board that we would not analyze the soil
 22 samples themselves for volatiles, because they
 23 mistrusted the analysis because of the sampling
 24 technique and all that. They would only accept the
 25 vapor studies. So we did no soil analyses

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1 whatsoever --
 2 HWONG: Okay.
 3 BURIL: -- for volatiles.
 4 CHRISTMANN: Did you have any previous soil
 5 matrix analyses that had been done before?
 6 BURIL: Before that agreement?
 7 CHRISTMANN: Yeah.
 8 BURIL: I don't think so, but -- no. I don't
 9 think so.
 10 CHRISTMANN: Because I know some of the older
 11 data you did have some -- you did, obviously, have
 12 some VOCs.
 13 BURIL: Some of that stuff was -- that might
 14 have been done maybe during construction as opposed
 15 to --
 16 CHRISTMANN: Yeah. And if -- I'd say it's
 17 probably worth going back and looking if you had --
 18 BURIL: If we have something like that?
 19 CHRISTMANN: If you have some comparison you can
 20 do like that. If not --
 21 BURIL: We'll take a look at the data. If we
 22 don't have it, then we won't provide it. But
 23 otherwise --
 24 CHRISTMANN: Right. You can't provide it if you
 25 don't have it.

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1 BURIL: What else you got, B.G.?
 2 RANDOLPH: I'm making some notes here, Chuck.
 3 BURIL: Okay.
 4 RANDOLPH: I guess we go to the next page,
 5 number 5. There was no water poured into any of the
 6 holes during construction.
 7 HWONG: Okay.
 8 BURIL: We just note that in the text.
 9 RANDOLPH: During well construction.
 10 BURIL: You're talking about the soil vapor
 11 wells. Right?
 12 HWONG: Yeah.
 13 BURIL: Yeah. Okay.
 14 RANDOLPH: The only place -- oh, I guess it
 15 would just be for a little bit of water that goes in
 16 to hydrate the bentonite in the middle of each
 17 bentonite section.
 18 BURIL: Do you want that kind of info in there?
 19 Is that what you're thinking?
 20 HWONG: Eventually -- you know, normally when we
 21 contract those well, people asking "Okay, I put some
 22 bentonite, couple buckets of water in there." But,
 23 you know, how much water exactly did you pour in
 24 here is something you don't know if you don't have
 25 records.

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1 RANDOLPH: Probably one to two gallons, three
 2 gallons at the very most in the middle of the
 3 sections, because the bentonite naturally hydrates
 4 itself from the moisture that's in the soil.
 5 BURIL: Let's just make a note of that in the
 6 text.
 7 RANDOLPH: Two to three gallons in the middle of
 8 each bentonite section.
 9 BURIL: Okay. We'll just make a note of that in
 10 the text, then.
 11 Would that address your comment, Joe?
 12 HWONG: Uh-huh. Uh-huh.
 13 BURIL: Okay. What else you got, B.G.?
 14 RANDOLPH: "Quantity of bentonite pellets used
 15 to absorb groundwater at the bottom of each
 16 boring." Basically, what we have is footages, not
 17 quantities. That's noted on the boring logs.
 18 HWONG: Okay.
 19 RANDOLPH: Or the well construction logs. We
 20 only have a total of the amount of bentonite that
 21 was used in each hole.
 22 BURIL: If we know the footage of bentonite in
 23 the bottom of the hole, we know the diameter of the
 24 hole, we can calculate volume.
 25 Would that be sufficient for you?

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1 Do you have that footage information?
 2 RANDOLPH: Oh, yes.
 3 CHRISTMANN: So you can give us --
 4 BURIL: You can estimate it, assuming the volume
 5 of a cylinder, there's so many X cubic feet of
 6 bentonite placed in the bottom, that kind of thing.
 7 I think that the next one, the 3-D
 8 representation or contour maps, this is one that
 9 gets asked for a number of times and it's very
 10 difficult for us to try to comply with this, and the
 11 reason being at JPL, you probably noticed that we've
 12 got pretty good topographic relief throughout the
 13 site. It's on the order of hundreds of feet.
 14 HWONG: Uh-huh.
 15 BURIL: It's very, very difficult to depict that
 16 in any way, shape or form that's useful in doing
 17 cross-sections or anything like that. And so we've
 18 not found a way except through plan view to try and
 19 give an idea of where things are. We've put in a
 20 cross-sectional kind of approach where we had --
 21 what were those, B.G.? We had those -- I don't want
 22 to call them soil logs, but they were indicating
 23 across a given section where the different borings
 24 were and what the concentrations were just to give
 25 some idea.

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1 But because of the way that certain of the
 2 borings would terminate at depths that were maybe
 3 halfway down, another boring was at a lower depth or
 4 a lower elevation when it was put in, so there
 5 wasn't a real uniform way of looking at this.
 6 And we haven't come up with a means of
 7 doing that at this point other than try in two
 8 dimensions.
 9 GEBERT: I think Alex and Mark had some
 10 comments.
 11 BURIL: We were going to talk about doing the
 12 baseline stuff and getting similar elevations
 13 together, and so forth.
 14 GEBERT: Yeah. Our comments were on those same
 15 lines.
 16 RANDOLPH: Right. I recall those. Just for
 17 everybody's knowledge, you've got to remember each
 18 one of these grids is 500 feet by 600 feet. The
 19 borings range from here to here and from down here
 20 to up here.
 21 BURIL: So it's a big area.
 22 RANDOLPH: You're talking about a boring that --
 23 well, you'd have to almost -- if you try to do
 24 anything, the vertical scale would only be one-tenth
 25 of the horizontal scale. So you have to exaggerate

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1 the horizontal scale or actually --
 2 BURIL: I think what Richard is saying, though,
 3 is that we talked about this at the last RPM
 4 meeting. It sounds like if we approach the comment
 5 in the same fashion that Mark and Alex talked about,
 6 we should be okay.
 7 GEBERT: Right.
 8 BURIL: Okay. We'll do that.
 9 Okay, B.G., which is the next one you're
 10 looking at?
 11 RANDOLPH: The next one.
 12 BURIL: Number 8?
 13 RANDOLPH: Number 8. That relates to another
 14 one. I'm pretty sure the number 11 down there in
 15 Summary and Conclusions refers to the comment number
 16 8 in Section 4. I think they're associated. But
 17 even noted on the boring log, that 6500 milligrams
 18 per kilogram at 20 feet is noted on the boring logs
 19 that that's asphalt granule that's in the fill.
 20 HWONG: In the fill?
 21 RANDOLPH: That's where we went right down
 22 through one of the old seepage pits.
 23 BURIL: Oh, okay. Is that noted in -- it's
 24 noted in the log. Is it noted in the text?
 25 RANDOLPH: It's noted in the log.

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1 BURIL: Is it noted in the text?
 2 RANDOLPH: We can add a comment or two.
 3 BURIL: Why don't we add a comment in the text
 4 and bring that out so there's no confusion in that.
 5 HWONG: Okay.
 6 RANDOLPH: I guess the figure, you already
 7 mentioned it under Figures. It's under number 14.
 8 HWONG: Yup. Yup.
 9 RANDOLPH: That relates to the same thing.
 10 All the others are basically really no
 11 problem.
 12 BURIL: Okay. How about the risk assessment
 13 ones?
 14 RANDOLPH: I have no comments on those
 15 whatsoever, and neither do our risk assessment
 16 people.
 17 BURIL: So we have no issues with these as far
 18 as being able to address them.
 19 Then I think we're done.
 20 Is there anything else we want to talk
 21 about while we're all sitting here as far as how
 22 things are going, or whatever? You fellows want the
 23 tour, I know. I'm going to give Kathy a call here
 24 as soon as we call the meeting over.
 25 Is there anything else we want to talk

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1 about?
 2 GEBERT: No.
 3 BURIL: All right. We'll call it done, then.
 4 Thank you very much.
 5 The official record is closed.
 6 (The proceedings adjourned at 3:24 P.M.)
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May 26, 1999

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